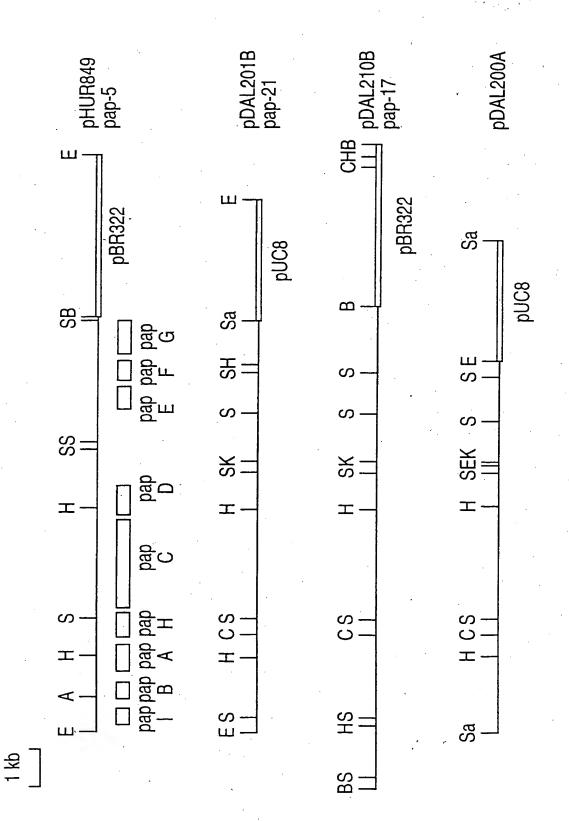
Title: IMMUNOGENIC PILI PRESENTING FOREIGN PEPTIDES, THEIR PRODUCTION AND USE Inventor(s): Peter O'Hanley et al.
Appl. No.: 09/833,079

1/8



| | | | • |
|-----------|-------------|-----|-------|
| APPROVED | OG | EIG | |
| | <u>0.u.</u> | IG. | i |
| BY | CLASS | SUE | CLASS |
| DRAFTSMAN | | | |

2/8

FIG. 2A

| THE TENTH OF THE PROPERTY OF THE TOTAL STATES OF THE PROPERTY | 1 | ATGAGACIGCGATICICIGITCCACTTTTCTTTTTTTGGCTGTGTTTTGTTCATGGTGTTT M R L R F S V P L F F F G C V F V H G V -22 | 60 |
|---|-----|---|-----|
| V W W D G R A A F H G E V V R P A C T L 181 GCGATGGAAGACGCCTGGCAGATTATTGATATGGGGGAAACCCCGGTACGGGATTTACAG A M E D A W Q I I D M G E T P V R D L Q 241 ATTGGTTTCTCCGGACCTGAAAGAAAATTCAGCCTCCGGCTCAGGAATTGTGAATTTAAC 300 N G F S G P E R K F S L R N C E F N 301 AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGCGTCCGG 360 S Q G N L F S D S R I R V T F D G V R 361 GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA 420 G E T P D K F N L S G Q A K G I N L Q I 421 GCTGATGTCAGGGGAAATATTGCCCCGGGCAGGAAAAGTAATGCCTGCAATACCATTGACG A D V R G N I A R A G K V M P A I P L T 430 GGTAATGAAGAAGCACCTTGGATTACACCCTCAGAATTGTGAGAAAAAAAA | 61 | TAGPTPPGMSLPFYWGFFH | 120 |
| A M E D A W Q I I D M G E T P V R D L Q 241 ATTGGTTTCTCCGGACCTGAAAGAAAATTCAGCCTCCGGCTCAGGAATTGTGAATTTAAC 300 N G F S G P E R K F S L R L R N C E F N 301 AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGCGTCCGG 360 S Q G N L F S D S R I R V T F D G V R 361 GGTGAAACGCCGGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA 420 G E T P D K F N L S G Q A K G I N L Q I 421 GCTGATGTCAGGGGAAATATTGCCCGGGCAGGAAAAGTAATGCCTGCAATACCATTGACG 480 A D V R G N I A R A G K V M P A I P L T 431 GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGAGAAACGGAAAAAAAA | 121 | GTATGGTGGGACGGCAGGGCTGCTTTTCATGGTGAGGTTGTCAGACCTGCCTG | 180 |
| N G F S G P E R K F S L R L R N C E F N 301 AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGCGTCCGG 360 S Q G N L F S D S R I R V T F D G V R 361 GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA 420 G E T P D K F N L S G Q A K G I N L Q I 421 GCTGATGTCAGGGGAAATATTGCCCCGGGCAGGAAAAGTAATGCCTGCAATACCATTGACG 480 A D V R G N I A R A G K V M P A I P L T 431 GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGAGAAAAAAAA | 181 | GCGATGGAAGACGCCTGGCAGATTATTGATATGGGGGAAACCCCGGTACGGGATTTACAG A M E D A W Q I I D M G E T P V R D L Q | 240 |
| 361 GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA 420 G E T P D K F N L S G Q A K G I N L Q I V R G N I A R A G K V M P A I P L T H S G Q A K G I N L Q I T C T GAGA AAAAAAAAAACTTGAA 540 G N E E A L D Y T L R I V R N G K K L E H S G CCGGAAAATATTGCTGAGAATTGTGAGAATTGTGAGAAAAAAAA | 241 | ATTGGTTTCTCCGGACCTGAAAGAAAATTCAGCCTCCGGCTCAGGAATTGTGAATTTAAC N G F S G P E R K F S L R L R N C E F N | 300 |
| G E I P D K F N L S G Q A K G I N L Q I 121 GCTGATGTCAGGGGAAATATTGCCCGGGCAGGAAAAGTAATGCCTGCAATACCATTGACG 480 A D V R G N I A R A G K V M P A I P L T 181 GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGAGAAACGGAAAAAAAA | 301 | AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGCGTCCGG SQGNLFSDSRIRVTFDGVR | 360 |
| A D V R G N I A R A G K V M P A I P L T 81 GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGAGAAACGGAAAAAAACTTGAA 540 G N E E A L D Y T L R I V R N G K K L E 41 GCCGGAAATTATTTTGCTGTGCTGGGATTCCGGGTCGATTATGAGTGA 588 | 361 | GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA G E T P D K F N L S G Q A K G I N L Q I | 420 |
| G N E E À L D Y T L R I V R N G K K L E 41 GCCGGAAAAAATTATGAGTGA 588 | 121 | GCTGATGTCAGGGGAAAAGTAATGCCTGCAATACCATTGACG A D V R G N I A R A G K V M P A I P L T | 480 |
| | 81 | GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGAGAAACGGAAAAAAACTTGAA G N E E A L D Y T L R I V R N G K K L E | 540 |
| | 41 | | |

| APPROVED | O.G. 1 | FIG. |
|-----------|--------|----------|
| BY | CLASS | SUBCLASS |
| DRAFTSMAN | | |

3/8

FIG. 2B

| . 1 | ATGAGACTGCGATTCTCTTTTTTTTTTTTGCTGTGTTTTTTTT | 60 |
|-----|--|-----|
| 61 | TTTGCCGGTCCGTTTCCTCCGCCCGGCATGTCCCTTCCTGAATACTGGGGAGAAGAACAC F A G P F P P G M S L P E Y W G E E H -1 +1 | 120 |
| 121 | GTATGGTGGGACGGCAGGGCTGCTTTTCATGGTGAGGTTGTCAGACCTGCCTG | 180 |
| 181 | GCGATGGAAGACGCCTGGCAGATTATCGATATGGGGGAAACCCCGGTTCGGGATTTACAG A M E D A W Q I I D M G E T P V R D L Q | 240 |
| 241 | ATTGGTTTCTCCGGACCTGAAAGAAAATTCAGCCTCCGGCTCAGGAACTGTGAATTTAAC N G F S G P E R K F S L R L R N C E F N | 300 |
| 301 | AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGCGTCCGG S Q G N L F S D S R I R V T F D G V R | 360 |
| 161 | GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGAATTAATCTGCAGATA G E T P D K F N L S G Q A K G I N L Q I | 420 |
| 21 | GCTGATGCCAGGGGAAATATTG <u>CCCGGG</u> CAGGGAAAGTAATGCCTGCAATACCATTGACG A D A R G N I A R A G K V M P A I P L T | 480 |
| 81 | GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGCGAAACGGAAAAAAACTTGAA G N E E A L D Y T L R I V R N G K K L E | 540 |
| 41 | GCCGGAAATTATTTTGCCGTGCTGGGATTCCGGGTCGATTATGAGTGA 588 A G N Y F A V L G F R V D Y E * | |
| | | |

4/8

FIG. 2C

| 1 | ATGAGACTGCGATTCTCTGTTCCACTTTTCTTTTTTTTTT | 60 |
|-----|--|-----|
| 61 | TTTGCCGGTCCGTTTCCTCCCGGCATGTCCCTTCCTGAATACTGGGGAGAAGAGCAC F A G P F P P G M S L P E Y W G E E H -1 +1 | 120 |
| 121 | GTATGGTGGGACGGCAGGGCTGCTTTTCATGGTGAGGTTGTCAGACCTGCCTG | 180 |
| 181 | GCGATGGAAGACGCCTGGCAGATT <u>ATCGAT</u> ATGGGGGAAACCCCGGTTCGGGATTTACAG A M E D A W Q I I D M G E T P V R D L Q | 240 |
| 241 | ATTGGTTTTTCCGGACCTGAAAGAAAATTCAGCCTCCGGCTCAGGAACTGTGAATTTAAC N G F S G P E R K F S L R L R N C E F N | 300 |
| 301 | AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGCGTCCGG SQGRVF | 360 |
| 361 | GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA G E T P D K F N L S G Q A K G I N L Q I | 420 |
| 421 | GCTGATGCCAGGGAAATATTG <u>CCCGGG</u> CAGGGAAAGTAATGCCTGCAATACCATTGACG A D A R G N I A R A G K V M P A I P L T | 480 |
| 481 | GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGAGAAACGGAAAAAAACTTGAA G N E E A L D Y T L R I V R N G K K L E | 540 |
| 541 | GCCGGAAATTATTTTGCCGTGCTGGGATTCCGGGTCGATTATGAGTGA 588 A G N Y F A V L G F R V D Y E * | |
| | | |



Appl. No.: 09/833,079

5/8



FIG. 2D

| FAGRED F PP PG M S L PE Y W G E E H -1 +1 121 GTATGGTGGGACGGCAGGGCTGCTTTTCATGGTGAGGTTGTCAGACCTGCCTG | 1 | ATGAGACTGCGATTCTCTGTTCCACTTTTCTTTTTTTGCTGTGTTTTGTTCATGGTGTTT M R L R F S V P L F F F C C V F V H G V -22 | 60 |
|--|------|---|-----|
| V W W D G R A A F H G E V V R P A C T L 181 GCGATGGAAGACGCCTGGCAGATTATCGATATGGGGGAAACCCCGGTTCGGGATTTACAG 240 241 ATTGGTTTTTCCGGACCTGAAAGAAAATTCAGCCTCCGGCTCAGGAACTGTGAATTTAAC 300 N G F S G P E R K F S L R L R N C E F N 301 AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGGATAAGGGTGACTTTCGATGGTGTCCGG 360 S Q G N L F S D S R I R V T F D G V R 361 GGTGAAACGCCGGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA 420 G E T P D K F N L S G Q A K G I N L Q I 421 GCTGATGCCAGGGGAAATATTGCCCGGGCAGGGAAAGTAATGCCTGCAATACCATTGACG 480 A D A R G N I A R A G K V M P A I P L T 481 GGTAATGAAGAAGCACTGGATTACACCCTCCAGAATTGTGCGAAAACGGAAAAAAAA | 61 | TTTGCCGGTCCGTTTCCTCCGCCCGGCATGTCCCTTCCTGAATACTGGGGAGAAGAACAC F A G P F P P G M S L P E Y W G E E H | 120 |
| A M E D A W Q I T D M G E T P V R D L Q 241 ATTGGTTTTTCCGGACCTGAAAGAAAATTCAGCCTCCGGCTCAGGAACTGTGAATTTAAC 300 N G F S G P E R K F S L R L R N C E F N 301 AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGTGTCCGG 360 S Q G G N L F S D S R I R V T F D G V R 361 GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAAGGCATTAATCTGCAGATA 420 G E T P D K F N L S G Q A K G I N L Q I 421 GCTGATGCCAGGGGAAATATTGCCCGGGCAGGGAAAGTAATGCCTGCAATACCATTGACG 480 A D A R G N I A R A G K V M P A I P L T 481 GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGCGAAAACGGAAAAAAAA | 121 | | 180 |
| N G F S G P E R K F S L R L R N C E F N 301 AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGTGTCCGG 360 S Q G G N L F S D S R I R V T F D G V R 361 GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA 420 G E T P D K F N L S G Q A K G I N L Q I 421 GCTGATGCCAGGGGAAATATTGCCCGGGCAGGGAAAGTAATGCCTGCAATACCATTGACG 480 A D A R G N I A R A G K V M P A I P L T 481 GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGCGAAACGGAAAAAAACTTGAA 540 G N E E A L D Y T L R I V R N G K K L E 541 GCCGGAAATTATTTTGCCGTGCTGGGATTCCGGGTCGATTATGAGTGA 588 | 181 | GCGATGGAAGACGCCTGGCAGATT <u>ATCGAT</u> ATGGGGGAAAACCCCGGTTCGGGATTTACAG A M E D A W Q I I D M G E T P V R D L Q | 240 |
| S Q G G N L F S D S R I R V T F D G V R 361 GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA 420 421 GCTGATGCCAGGGGAAATATTGCCCGGGCAGGGAAAGTAATGCCTGCAATACCATTGACG 480 421 GCTGATGCCAGGGGAAATATTGCCCGGGCCAGGGAAAGTAATGCCTGCAATACCATTGACG 480 421 GCTGATGCCAGGGAAATATTGCCGGGATTACACCCTCAGAATTGTGCGAAACGGAAAAAAACTTGAA 540 431 GGTAATGAAGAAGCGCTGGGATTACACCCTCAGAATTGTGCGAAACGGAAAAAAACTTGAA 540 434 GCCGGAAATTATTTTGCCGTGCTGGGATTCCGGGTCGATTATGAGTGA 588 | 241. | ATTGGTTTTTCCGGACCTGAAAGAAAATTCAGCCTCCGGCTCAGGAACTGTGAATTTAAC N G F S G P E R K F S L R L R N C E F N | 300 |
| G E T P D K F N L S G Q A K G I N L Q I 421 GCTGATGCCAGGGGAAATATTGCCCGGGCAGGGAAAGTAATGCCTGCAATACCATTGACG 480 A D A R G N I A R A G K V M P A I P L T 481 GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGCGAAAACGGAAAAAAACTTGAA 540 G N E E A L D Y T L R I V R N G K K L E 541 GCCGGAAATTATTTTGCCGTGCTGGGATTCCGGGTCGATTATGAGTGA 588 | 301 | AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGTGTCCGG S Q G N L F S D S R I R V T F D G V R | 360 |
| A D A R G N I A R A G K V M P A I P L T 481 GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGCGAAACGGAAAAAAACTTGAA 540 G N E E A L D Y T L R I V R N G K K L E 541 GCCGGAAATTATTTTGCCGTGCTGGGATTCCGGGTCGATTATGAGTGA 588 | 361 | GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA G E T P D K F N L S G Q A K G I N L Q I | 420 |
| G N E E A L D Y T L R I V R N G K K L E 541 GCCGGAAATTATTTTGCCGTGCTGGGATTCCGGGTCGATTATGAGTGA 588 | 421 | GCTGATGCCAGGGGAAATATTG <u>CCCGGG</u> CAGGGAAAGTAATGCCTGCAATACCATTGACG A D A R G N I A R A G K V M P A I P L T | 480 |
| | 481 | GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGCGAAAACGGAAAAAAACTTGAA G N E E A L D Y T L R I V R N G K K L E | 540 |
| | 541 | | |

6/8

FIG. 3

| | 1 | 60 |
|---|---|-----|
| pHUR849 pDAL200A pDAL201B pDAL210B | ATGAGACTGCGATTCTCTGTTCCACTTTTCTTTTTTGGCTGTGTTTTGTTCATGGTGTTT t t t t | 100 |
| pHUR849 pDAL200A pDAL201B pDAL210B | TTTGCCGGTCCGTTTCCTCCGCCCGGCATGTCCCTTCCTGAATACTGGGGAGAAGAGCAC t t a | |
| pHUR849 pDAL200A pDAL201B pDAL210B | GTATGGTGGGACGCCAGGGCTGCTTTTCATGGTGAGGTTGTCAGACCTGCCTG | 180 |
| pHUR849 pDAL200A pDAL201B | GCGATGGAAGACGCCTGGCAGATTATTGATATGGGGGAAACCCCGGTACGGGATTTACAG | 240 |
| pDAL210B | | 300 |
| pHUR849 pDAL200A pDAL201B pDAL210B | ATTGGTTTCTCCGGACCTGAAAGAAAATTCAGCCTCCGGCTCAGGAATTGTGAATTTAAC t c c c t c c c c c c c c c c c c c c | 360 |
| pHUR849 pDAL200A pDAL201B pDAL210B | AGTCAGGGTGGGAACCTTTTCTCTGATTCCCGGATAAGGGTGACTTTCGATGGCGTCCGG | |
| pHUR849 pDAL200A pDAL201B pDAL210B | GGTGAAACGCCGGATAAGTTTAATTTATCCGGTCAGGCAAAAGGCATTAATCTGCAGATA a | 420 |
| pHUR849 pDAL200A pDAL201B pDAL210B | GCTGATGTCAGGGGAAATATTGCCCGGGCAGGAAAAGTAATGCCTGCAATACCATTGACG | 480 |
| pHUR849 pDAL200A pDAL201B pDAL210B | GGTAATGAAGAAGCGCTGGATTACACCCTCAGAATTGTGAGAAACGGAAAAAAACTTGAA C C C C 541 | 540 |
| pHUR849 pDAL200A pDAL201B pDAL210B | GCCGGAAATTATTTTGCTGTGCTGGGATTCCGGGTCGATTATGAGTGA c c c | |

| APPROVED | O.G. | FIG. |
|-----------|-------|--------|
| BY | CLASS | |
| DRAFTSMAN | | 332.33 |
| | | |

7/8

| -22 | | | | | | | | | | | | | | | $\overline{}$ | 工. | | | | | | | | | | | | | | | | | 18 | ~ |
|---|--------|-------------|-----------|-----|----|---|----------|----------|-----|---|---------------|-------------|-----|-----------|---------------|-----|----------|----|----|----|----------|----------|-----|------------|---|---------------|---|---------------|----------|-----|-------------|----------|----|---------|
| MRLRFSVPLFFGCVFVHGVFA ^V GPFPPPGMSLPEYWGEEH | ٦ د | <u>م</u> | | | ш_ | | ے ر | <u> </u> | = | | _ | 5 | > | LL | .≪ | وي | ۵. | | ۵. | ۵. | ئے | 9 | ≥ . | S | | | | _ | 9 | لبا | لبا | _ | · | |
| 19 | | | | | | | ٠ | | | | | | | | | • | | | | | | | | | | | | • | | | | | 55 | ~ |
| V W W D G R A A F H G E V V R P A C T L A M E D A W Q I I D M G E T P V R D L | G R . | \forall | <u> </u> | = | 9 | | - | = | ~ | ~ | <u>ں</u> | | | ¥ | \mathbf{x} | لبا | | V | 3 | 0 | — | | | = | | | | | \simeq | 0 | | 0 | | |
| 29 | | | | | | | | | | | | | | | | | | • | | | | | | | | | | | | | | | 8 | ~~ |
| N G F S G P E R K F S L R L R N C E F N S Q G G N L F S D S R I R V T F D G V R | 6 P | <u>ح</u> | \succeq | ٔ ب | S | | ∞_ | | ~ | _ | 4.3 | <u> </u> | _ | S | Ŏ | 9 | 9 | = | | ш_ | S | 0 | S | ∞_ | _ | ~ | _ | | 0 | 9 | > | ~ | | |
| 66 | | | | | | | | | | | | | | | | | | | | | | | | | , | | | | | | | | 13 | <u></u> |
| GETPOKFNLSGQAKGINLQIADVRGNIARAGKVMPAIPLT | | | | S | 9 | 0 | ₩ | ~ | .—, | | _ | 0 | . — | W | | - | \simeq | 9 | = | - | V | \simeq | - | C D | ~ | _ | | _ | | ۵. | _ | \vdash | | |
| 139 | | | | | | | | | | | | | | | | 7 | | | | - | | | | | | | | 173 | | | | | | |
| GNEEALDYTLRIVRNGKKLEAGNYFAVLGFRVDYE | | > | - | | ∞ | _ | = | ~ | _ | ~ | > 2 | _ | لب | \forall | 9 | = | > | ш_ | ¥ | = | | 5 | | ~ | _ | $\overline{}$ | | | | | | | | |

19833079.O91801

Title: IMMUNOGENIC PILI PRESENTING FOREIGN PEPTIDES, THEIR PRODUCTION AND USE Inventor(s): Peter O'Hanley et al. Appl. No.: 09/833,079

8/8

| 26127 IDGRAARAGKVMPAIPLTGNEEALDYTLRIVRNGGKKLEANGNYFAVLGFRVDYE | 126 DMGETPVRDLQNGFSPERKFSLRLRNCEFNSQGGNLFSDSRIRVTFDDVRGETPDKENLSGGQAKGINLQIADVRGNIA | | 47_123 IDGRAAFHGEVVRPACTLAMEDAWQIIGAGKVMPAIPLTGNEEALDYTLRIVRNGGKKLEANGNYFAVLGFRVDYE | JMGETPVRDLONGFSPERKFSLRLRNCEFNSQGGNLFSDSRIRVTFDDVRGETPDKFNLSGGQAKGINLQIADARGNIA 126 |
|--|--|--------|--|--|
| 1 | 27 | IG. 5B | 1 | I DMGETPVRDLONGFSPERKFSLRLRNCEFNSQGGNLF |
| GPFPPPGMSLPEYWGEEHVWWDGRAARAGKVMPAIPU | FHGEVVRPACTLAMEDAWQIIDMGETPVRDLQNGFSF | | GPFPPPGMSLPEYWGEEHVWWDGRAAFHGEVVRPACT | 48 |